REMARKS

This is in response to the Office Action mailed on November 24, 2008. Claims 1-3 and 8-21 were pending in the application, and the Examiner rejected all claims. With this amendment, claims 1, 10, and 15-21 are amended and the remaining claims are unchanged.

On page 2 of the Office Action, the Examiner rejected claims 10-21 under 35 U.S.C. §101 as not falling within a statutory category of invention. The claims have now been amended to more specifically tie them to another statutory category. Therefore, Applicant submits that the claims are in allowable form.

The Examiner maintained a rejection of claims 1-3, 8-14 and 19-21 under 35 U.S.C. §103(a) over Huang WO01/93249, in view of Huang et al., Spoken Language Processing, A Guide to Theory, Algorithm, and System Development; 2001. The Examiner also maintained the rejection of claims 15-18 under 35 U.S.C. §102(b) as being anticipated by Huang et al. WO01/93249. Applicant respectfully traverses the Examiner's rejection. Of the rejected claims, claims 1, 10 and 15 are independent claims.

Independent claim 1 is drawn to a speech processing system that includes an acoustic model and "a model authoring component receiving an input schema that describes semantic classes and slots that model input words in a domain of interest; [and] a composite language model that supports a vocabulary of words and including a rules-based model portion that has a plurality of automatically generated grammar rules, the grammar rules being automatically generated by the model authoring component from the input schema, to define a rules-based grammar parse tree that maps words in a natural language speech input into portions of the rules-based grammar parse tree...". The claim also includes a statistical model portion, with a specific statistical n-gram model for modeling unseen words, and a decoder.

The Examiner cited the Huang 249 reference to meet the limitation that the model authoring component automatically generates the grammar rules from the input schema. Applicant argued over this interpretation of the Huang 249 reference in its last response. However, Applicant has amended independent claim 1 to even more clearly specify that the rules are automatically generated from the schema. Applicant has also amended the claim to

specifically indicate that the schema describes semantic classes and slots that model input words in a domain of interest.

There is no teaching or suggestion of this, whatsoever, by the Huang 249 reference. The Examiner cited Huang 249 at page 15, lines 17-22 and page 22, lines 13-19 to meet the limitation. See Office Action page 3, second paragraph. The first of these portions states, in its entirety, as follows:

"A context-free grammar provides a rule-based model that can capture semantic or syntactic concepts (e.g., an action, a subject, an object, etc.) of sentence structure or spoken language. For instance, by way of example, one set of context free grammars the larger....".

The cited text on page 22 states:

In this aspect of the present invention, each of the slots can form semantic or syntactic concepts in which a context-free grammar is written or otherwise provided. A non-terminal token of the context-free grammar represents each of the terminals and other non-terminals contained therein.

The Examiner concluded from these two quotes that "using rule-based model to capture semantic or syntactic concepts of sentence structure or spoken language implies the generation of a rules-based grammar parse tree for mapping to a natural input."

Of course, this is not what independent claim 1 claims. Claim 1 does not simply allow for the generation of a rules-based grammar parse tree, as stated by the Examiner. Instead, claim 1 specifically states that the model authoring component receives an input schema that describes semantic classes and slots that model input words in a domain of interest and "the grammar rules being automatically generated by the model authoring component from the input schema...". To say that the reference implies allowing the generation of a rules-based grammar parse tree particularly fails to meet the limitation of claim 1. The claim states that the rules are automatically generated from the input schema. This is neither taught, nor suggested, nor even mentioned, by the references cited by the Examiner. Therefore, Applicant submits that independent claim 1 is allowable.

Independent claim 15 is drawn to a composite model authoring system for authoring a composite language model. The system includes an authoring component receiving a schema that describes semantic classes and slots that model expected words in a domain of interest. The authoring component generat[es] an automatically learned rules-based model having automatically learned grammar rules, "automatically generated by the authoring component from the schema...". While the references cited by the Examiner do indicate that grammar rules are used, there is no indication that they are automatically generated, much less automatically generated from the input schema. This is simply not found in the references cited by the Examiner. Applicant thus submits that independent claim 15 is allowable as well.

In addressing independent claim 10, the Examiner stated that Huang et al. 249 discloses obtaining probabilities for unseen bi-grams through a backoff mechanism. See the bottom of page 3 of the Office Action. The Examiner indicated that the formula in section 12.3.1 (page 618) of the reference shows that a probability is determined for each word. Independent claim 10 is distinguishable in that it generates a uniform probability for each word hypothesis that corresponds to an unseen word. The Examiner stated "Applicant does not claim assigning a uniform probability to all unseen words as he/she argued on page 7." Applicant traverses this assertion, because claim 10, as it stood before the present amendment, included the step "assigning a uniform backoff probability to each word hypothesis, that corresponds to an unseen word, with the backoff model." This clearly indicated that each of those words was assigned a uniform probability. However, in order to address the Examiner's interpretation, Applicant has amended independent claim 10 to include "assigning...a uniform backoff probability to every word hypothesis, that corresponds to an unseen word, with the backoff model."

It would appear that the Examiner has acknowledged that the references do not teach this. They only teach that unseen words are assigned a probability using a backoff mechanism, but there is no teaching or suggestion that a uniform probability is assigned to every hypothesis that corresponds to an unseen word. Applicant thus submits that independent claim 10 is allowable over the references cited by the Examiner.

In conclusion, Applicant submits that independent claims 1, 10 and 15 are allowable over the references cited by the Examiner. Applicant further submits that dependent claims 2-3, 8-9, 11-14, and 16-21, which depend either directly or ultimately from the independent claims, are allowable as well. Reconsideration and allowance of claims 1-3 and 8-21 are respectfully requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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